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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/09/2003

Kevin Zugibe

HUDSON 208

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EXAMINER

VON BUHR, MARIA N

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/730,791	Applicant(s) ZUGIBE ET AL.	
	Examiner M.N. VON BUHR	Art Unit 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Examiner acknowledges receipt of Applicant's response to the previous Office action, received 28 July 2008; which amends the drawings, specification and claims 18-21,25, 26, 29, 30, 34, 35, 39, 43-46 and 49-51. Claims 18-59 remain pending in this application.
2. The replacement sheets for Figures 1-5 were received on 28 July 2008. These drawings are acceptable.
3. Examiner acknowledges receipt of new sheets for Figures 10 and 11. These drawings are acceptable.
4. The drawings remain objected to because, as presented in the previous Office action, Figures 6A-6B should also be designated by a legend such as -- Prior Art --, because only that which is old is illustrated. See MPEP §608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, Applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
5. In response to Applicant's introduction of new Figures 10 and 11, the objection to the drawings under 37 CFR 1.83(a) is deemed to have been overcome and is, therefore, withdrawn.
6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
7. In response to Applicant's remarks, concerning the 35 U.S.C. §112, first paragraph, rejection of the claims, as failing to comply with the written description requirement, Examiner notes the following:
 - a. As presented in the previous Office action, independent claims 18, 21, 43 and 46 each perform and utilize a "thermodynamic analysis" and utilize a "consistency analysis." However, the instant specification is unclear as to what these analyses actually encompass, because these phrases are not used in the description of the instant invention. The instant specification, as a whole, discusses many types of information/data and examination of such data, but does not correlate such discussion with any "type" of analysis. In other words, the instant specification does not define what constitutes a "thermodynamic analysis" and a "consistency analysis." Therefore, it is unclear what such phrases refer to. Hence, it is unclear what Applicant had possession of, and whether such was characterizable as a "thermodynamic analysis" and a "consistency analysis."

b. Further as presented in the previous Office action, independent claim 39 claims the step of “thermodynamically modeling” a refrigeration system. However, the instant specification is unclear with regard to what this would constitute/encompass, since this phrase is not used in the description of the instant invention. Although the description does mention “modeling,” there is no provision for “thermodynamically modeling.” Hence, it is unclear what Applicant had possession of, and whether such was characterizable as “thermodynamic modeling.”

c. At pages 11-12 of the instant response, Applicant attempts to address this issue by providing definitions for the phrases “thermodynamic analysis” and “consistency analysis.” However, this does not resolve the issue, because there is still no correlation between the language used in the claims and the language used in the specification. The rejection did not allege that the phrases are not known or understood. What the rejection was directed to was the lack of nexus between the claims and the specification. One having ordinary skill in the art would not be able to determine what the claimed phrases encompass (i.e.; the scope of the claimed phrases is unclear), because there is no clear correlation between the instantly claimed phrases and the description of the instant invention.

d. Therefore, claims 18-59 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

8. In response to Applicant’s remarks, concerning the 35 U.S.C. §112, first paragraph, rejection of the claims, as failing to comply with the enabling disclosure requirement, Examiner notes the following:

a. As presented in the previous Office action, the specification, while being enabling for the use of various examinations for interpreting various types of data and generic modeling, does not reasonably provide enablement specifically for a “thermodynamic analysis” and “consistency analysis” (as per independent claims 18, 21, 43 and 46), nor for “thermodynamically modeling” (independent claim 39). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims, since there is no correlation between the various examinations and the modeling described in the specification and the instant claim language “thermodynamic analysis,” “consistency analysis” and “thermodynamic modeling.” One of ordinary skill in the art would not be able to determine which aspects of the disclosure are actually encompassed by such phrases, since they are not used in the specification nor defined in any way.

b. At page 13 of the instant response, Applicant attempts to address this issue by arguing that enablement of the instant invention is somehow tied to whether a rejection under obviousness is possible. This is not persuasive, because an argument of non-enablement is not inconsistent with an argument of obviousness, and the issues are not mutually exclusive. The fact that a reference by another inventive entity would enable a

person of ordinary skill in the art to make and/or use the invention disclosed herein does not save Applicant from meeting the burden imposed by 35 U.S.C. §112, first paragraph. In this case, what Applicant has failed to accomplish is to provide a specification which would enable a person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims (emphasis added). Because the scope of the claimed phrases is unclear (as addressed above), it is unreasonable to allege that one having ordinary skill in the art would be able to make and/or use the invention commensurate in scope with these claimed phrases. The fact that other inventive entities are claiming various types of “thermodynamic analysis,” “consistency analysis” and “thermodynamic modeling” does not obviate Applicant’s requirement to clearly define and support what constitutes and is bound by the instantly claimed language.

c. Therefore, claims 18-59 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enabling disclosure requirement, specifically for the instantly claimed phrases “thermodynamic analysis” and “consistency analysis” (as per independent claims 18, 21, 43 and 46) and “thermodynamically modeling” (independent claim 39).

9. In response to Applicant’s amendment, the objection to claims 18 and 39, and the 35 U.S.C. §112, second paragraph, rejection of the claims are deemed to have been overcome and are, therefore, withdrawn.

10. In response to Applicant’s amendment and remarks, concerning the 35 U.S.C. §103(a) rejection of claims 18-59, as being unpatentable over Hebert (U.S. Patent No. 7,139,564), in view of Applicant’s admitted prior art (at pages 3-7 of the instant specification), Examiner notes the following:

a. As presented in the previous Office action, As per the claims, Hebert discloses a “system for providing ... equipment performance and efficiency analysis” (the abstract) for a refrigeration embodiment (col. 3, line 35; col. 6, lines 14-15; col. 7, lines 48-51). In this regard, Hebert teaches, at cols. 6-14, a detailed HVAC implementation of a “methodology whereby field located technician/engineer can utilize computer system to analyze field acquired data [sic], utilizing all available equipment, data, thermodynamic data [sic], electrical data, etc to provide analysis of field located equipment” (col. 6, lines 22-24), wherein ““Home” computer uses all field-acquired data to search and integrate with available data banks ... and using calculation algorithms available in calculation program to calculate or determine: a) Current system efficiency b) Estimated current annual cost of operation c) All current equipment problems (possible) d) Potential savings (plus cost and payback) for 1) All current problems solved (that can be solved by each solution and by combined solutions) 2) Change out old equipment to new equipment by efficiency available 3) Adding 1 or more efficiency enhancing products to old equipment by each product and by combined products 4) Combination of 2) and 3) above” (col. 8, lines 18-34). To perform this analysis, the system of Hebert uses multiple known characteristics of the

refrigeration system (analogous to the instantly claimed “model”) and operational data measurements for the refrigeration system (col. 6, line 25 - col. 7, line 47), and further teaches that “for specific applications such as water cooled equipment, chillers, refrigeration equipment, etc, additional and/or different data points, observations and equipment date [sic] will need to be entered on “forms” specific to application” (col. 7, lines 48-52). The analysis of Hebert is inherently thermodynamic, due to the types of data collected and types of comparisons made. Also, Hebert further teaches that these analyses are used to calculate adjustments (at least col. 10, line 42), which is analogous to the instantly claimed “controls for altering physical parameters/process variables” and “closed loop control,” and to perform cost-based determinations (col. 6, lines 58-59; col. 8, lines 24-34; col. 13, line 15 - col. 14, line 8; col. 14, lines 29-56).

As best understood by Examiner, in view of the ambiguities noted above, Hebert teaches Applicant’s invention substantially as instantly claimed. However, as best understood by Examiner, it appears that Hebert does not teach the instantly claimed “consistency analysis.” However, the broadest reasonable interpretation of such a phrase, without clear guidance from the instant specification (as noted above), is to perform some sort of error and/or verification procedures. In this regard, it is very well known in the control arts to perform periodic error checks of the control system, in order to maintain reliable operation. Accordingly, it would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to include such error checking (i.e.; consistency analysis) in the system of Hebert, to provide for the well-known benefit of increased system reliability.

Further as best understood by Examiner, in view of the ambiguities noted above, Hebert teaches Applicant’s invention substantially as instantly claimed. However, Hebert does not teach the instantly claimed altering of oil concentration and/or refrigerant charge. In this regard, Applicant admits to the well-known nature of such adjustments (at least at paragraphs 11 and 15-26, of U.S. Patent Application Publication 2007/0256432). It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to perform such adjustments in the system of Hebert, because Hebert teaches that “additional and/or different data points, observations and equipment date [sic] will need to be entered on “forms” specific to application” (col. 7, lines 48-52).

b. Applicant argues that “Hebert implements a system and method where operational parameters of a HVAC/refrigeration system are compared to nominal values of the same type of system, to determine a deviation. Thus, while Hebert does discuss performing thermodynamic calculations of a particular system at a particular state, and determining whether these are consistent with the manufacturers' specifications for that type of system ... Hebert does not seek to determine the actual optimum state of a particular refrigeration system with respect to its own performance. In fact, the nominal optimum state of a refrigeration system is dependent on a number of factors and presumptions, as well as installation-specific characteristics, so that a comparison with

nominal is of limited value and may lead to a correction of the refrigeration system to a less efficient operating state in some cases. Thus, the "model" of the refrigeration system, if any, created by Hebert is a theoretical one, and does not account for installation-specific issues, aging, and manufacturing variations. On the other hand, the present invention measures performance of a refrigeration system against the optimum for that system, and thus accounts for such considerations. Therefore, the present system and method are usable in "custom" installations and large industrial processes where nominal performance data simply do not exist" (page 14 of the instant response). This argument is only partially persuasive.

c. As per amended claims 39 and 43, this argument is not persuasive, because it is not supported by the instant claim language. There is no support within the instant claim language for the distinction Applicant is making between a supposedly "theoretical" model, as taught by Hebert, and a supposedly "optimum" model, which takes installation-specific issues into account, as per the instant claims.

d. As per amended claims 18, 21 and 46, this argument is persuasive, in so far as Examiner understands the argument to rely on the newly presented claim language "storing parameters of a model of a refrigeration system derived from measurements of actual operational parameters of the refrigeration system" (amended claim 18), "defining a model of a refrigeration system in an optimal state based on measurements of actual operating parameters of the refrigeration system" (amended claim 21) and "determining a model of the refrigeration system having an optimum state based on prior measurements of refrigeration system performance" (amended claim 46). However, in this regard, Examiner draws Applicant's attention to Keeler et al. (U.S. Patent No. 6,243,696; newly cited), which discloses an "automated method for building a model." Keeler et al. teach that it was known in the computer control arts to create models of systems both "off-line" (similarly to the "theoretical" approach of Hebert, argued by Applicant) and "on-line" (i.e.; during system operation, which uses operating parameters of the system to create the model). Specifically, Keeler et al. teach "a method for creating a representation of a plant and incorporating it into a run time prediction system for generating predicted output values representing the operating parameters of the plant during operation thereof. A historical database is provided representing the operation of the plant and comprised of data associated with plant inputs and plant Data is extracted from the historical database and then a dataset of variables corresponding to the inputs and outputs from the historical database is created. An off-line predictive model of the plant is then created utilizing the created dataset to predict a plant output, the off-line model defined by off-line model parameters. An on-line model is then created for generating predicted output values in real time during the operation the a plant and defined by on-line model parameters. The on-line model parameters are then replaced with the off-line model parameters after generation thereof" (col. 2, lines 34-50). It would have been obvious, to one having ordinary skill in the art, at the time the instant invention was made, to utilize such an "on-line" creation of a system model, as taught by Keeler et al., in the "system for providing ... equipment

performance and efficiency analysis” of a refrigeration system of Hebert, because Keeler et al. teach a resultant increase in efficiency and accuracy of the analysis.

e. Accordingly, claims 39-45 stand rejected under 35 U.S.C. §103(a), as being unpatentable over Hebert (U.S. Patent No. 7,139,564) in view of Applicant’s admitted prior art (at pages 3-7 of the instant specification), while claims 18-38 and 46-59 now stand rejected under 35 U.S.C. §103(a), as being unpatentable over Hebert (U.S. Patent No. 7,139,564) in view of Applicant’s admitted prior art (at pages 3-7 of the instant specification), further in view of Keeler et al. (U.S. Patent No. 6,243,696).

11. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. Applicant is advised to carefully review the cited art, as evidence of the state of the art, in preparation for responding to this Office action.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP §706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M.N. VON BUHR whose telephone number is (571)272-3755. The examiner can normally be reached on M-F (9am-5pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Albert Decady can be reached on 571-272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/M.N. VON BUHR/
Primary Examiner, Art Unit 2121